

Meyer and J. Rosicki.—On a new glucosid obtained from *Lupinus luteus*, by E. Schulze and J. Barbieri.—On the action of bromine upon some paraffins of high molecular weights, by V. Merz and F. Weith.—On cantharic acid, by J. Piccard.—On some reactions of silver ultramarine, by K. Heumann.—On the reactions of nitrosyl silver, by W. Zorn.—On the transformation of undecylenic acid into undecylic acid ($C_{11}H_{22}O_2$), by F. Krafft.—On the stipulæ and their rôle in inflorescence and the flowers of plants, by M. Clos.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 8.—“On the Relation between the Diurnal Range of Magnetic Declination and Horizontal Force, as observed at the Royal Observatory, Greenwich, during the years 1841 to 1877, and the Period of Solar Spot Frequency.” By William Ellis, F.R.A.S., Superintendent of the Magnetical and Meteorological Department, Royal Observatory, Greenwich. Communicated by Sir George Airy, K.C.B., F.R.S., Astronomer-Royal.

In this paper the author draws attention to the long series of magnetical observations which have been made at the Royal Observatory under the direction of Sir George B. Airy, K.C.B., Astronomer-Royal, and remarks that examination of the Greenwich records shows that, in addition to the ordinary diurnal and annual changes, there appears to exist, in the magnetic diurnal ranges, an inequality, resembling in its features the well-established eleven-year sun-spot period.

This is not by any means the first time that such relation has been discussed, it being, by some investigators, considered to be already sufficiently well proved. But it appeared that the long series of Greenwich observations might be well applied as an independent test of the accuracy of the supposed relation.

The results for declination and horizontal force only are used, the strict continuity of the record by the vertical force instrument being somewhat broken.

The monthly mean diurnal range of declination, or of horizontal force, is taken to represent the magnetic energy of the month relatively to other months, and smoothed curves of the magnetic numbers and Dr. Wolf's sun-spot numbers are drawn, which show a remarkable similarity.

The epochs of minimum and maximum being tabulated, it is found that, on the average, the mean magnetic epoch follows the sun-spot epoch by 0.27 of a year. By another method of tabulation the difference becomes reduced to 0.10 of a year.

It seemed further desirable to ascertain whether the more fitful changes of the phenomena in any way also correspond. To make this comparison, the magnetic numbers, instead of being smoothed, as before described, were now cleared only of the average annual inequality, and compared with the actual monthly sun-spot numbers. Curves are given, founded on these numbers, and they show some very remarkable correspondences between the more rapid sun-spot and magnetic variations, especially between the years 1869 and 1873.

Further inquiry seems to point to a variation in the annual inequalities of magnetic diurnal range.

The following are the general conclusions supposed to be derived from the whole inquiry:—

1. That the diurnal ranges of the magnetic elements of declination and horizontal force are subject to a periodical variation, the duration of which is equal to that of the known eleven-year sun-spot period.

2. That the epochs of minimum and maximum of magnetic and sun-spot effect are nearly coincident; the magnetic epochs, on the whole, occurring somewhat later than the corresponding sun-spot epochs. The variations of duration in different periods appear to be similar for both phenomena.

3. That the occasional more sudden outbursts of magnetic and sun-spot energy, extending sometimes over periods of several months, appear to occur nearly simultaneously, and progress collaterally.

4. That it seems probable that the annual inequalities of magnetic diurnal range are subject also to periodical variation, being increased at the time of a sun-spot maximum, when the mean diurnal range is increased, and diminished at the time of a sun-spot minimum, when the mean diurnal range is diminished.

Conclusions Nos. 1, 2, and 3 appear to be sufficiently certain, but the evidence in favour of No. 4 is not so decisive.

Chemical Society, May 15.—Mr. Warren de la Rue, president, in the chair.—The following papers were read:—On nitric acid, part ii., by R. Warington. The author finds that light hinders the conversion of ammonia salts into nitrites and nitrates, by the nitrifying ferment; the presence of carbonate of calcium is indispensable; nitrification is stopped by a temperature of 40° C.; there is a period of incubation after the addition of the ferment, during which no effect is produced; this period is increased by using stronger solutions of ammonia salts, but diminished by raising the temperature; in some cases nitrites, in others nitrates are formed.—On the alkaloids of the Veratrum family, part iii., by C. R. A. Wright and A. P. Luff. The authors have obtained two new crystalline alkaloids, pseudojervine, melting at 299°, and rubijervine, melting at 237°, and a new amorphous base veratralbine, from Veratrum album.—On the alkaloids of the Veratrum, part iv., by C. R. A. Wright. From Veratrum viride the author has obtained jervine, pseudojervine, rubijervine, veratrine, and cevadine.—On the alkaloids of the aconites, part iv., by C. R. A. Wright and A. P. Luff. The authors have examined Japanese aconite roots, and obtained a base Japaconitine melting 185°, resembling aconitine. By saponification a new base Japaconin was formed. The yield of alkaloids from Japanese aconite is about three times that from *A. napellus*.—On the action of hydrochloric acid on manganese dioxide, by S. U. Pickering. The author criticises, and in the main disagrees with the conclusions of W. W. Fisher as to the existence of manganese tetrachloride.—On some reactions of the ammoniochloride of magnesium, known as magnesia mixture, by H. D'Arcy Power. The author has observed that potassium salts, and especially potassium iodide, precipitate magnesium hydrate from this solution to an extent equal to 46 per cent. of the magnesia present.—The composition of cow's milk in health and disease, by A. Wynter Blyth. The author has separated from whey two alkaloidal bodies, by precipitation with nitrate of mercury, galactine, and lactochrome; also a supposed glucoside, precipitated by tannin. He gives details as to the composition of milk from healthy and diseased cows, and concludes that a cow suffering from very acute disease may give milk differing in no essential feature from normal milk.—On the effect of alcohol on saliva, and on the chemistry of digestion, by W. H. Watson. Alcohol hinders markedly the conversion of starch into sugar by saliva; a trace of hydrochloric acid, on the other hand, increases the rapidity of the conversion.

Anthropological Institute, April 29.—Mr. E. Burnet Tylor, D.C.L., F.R.S., president, in the chair.—The following new Members were announced:—W. S. Duncan and Edmund Knowles Binns.—A paper was read by Col. H. Yule, C.B., entitled “Notes on Analogies between the Indo-Chinese Races and the Races of the Indian Archipelago.” The author first stated that the paper was written abroad some nine or ten years ago, and had been unaltered since. A large number of analogous manners and practices were adduced, common alike to the peoples of the two regions, which Col. Yule, in conclusion, considered would singly be of no value as arguments for some original close bond of kindred between the races of the Indo-Chinese countries and those of the Archipelago. But when thus accumulated they must surely be admitted to have great weight, and to be too numerous and striking, considering the comparative contiguity of the regions occupied by those races, and the physical resemblances which often occur among those of them, the most remote from one another to be due merely to the parallel development of isolated bodies of men in like stages of growth.—A paper was also read by the Rev. James Sibree, jun., of the London Missionary Society, upon relationships and the names used for them among the peoples of Madagascar, chiefly the Hovas, together with observations upon marriage customs and morals among the Malagasy. It was remarked that in the Malagasy language there are in many classes of words strange deficiencies, as compared with English, while, at the same time, in other groups there is great fulness and minuteness of distinction. Notice was taken of the low standard of morals generally prevailing through the island, and of the evidence of this given by the dictionary, in the absence of such words as chastity, purity, and allied terms. The paper concluded by a description of the class distinctions among the Hovas, there being three main divisions: the Andrians or nobles, the Hovas or commoners, and the Andevo or slaves, the subdivisions of which were also pointed out, together with the restrictions upon marriage between the different ranks of native society.

Entomological Society, May 7.—J. W. Dunning, M.A., F.L.S., vice-president, in the chair.—M. N. Joly, of Toulouse, was elected a Foreign Member.—Mr. H. J. Elwes exhibited a collection of lepidoptera made in Asia Minor by Dr. Staudinger.—Dr. Wallace exhibited a collection of lepidoptera made by his son in the United States of Columbia.—Mr. W. L. Distant exhibited a West African specimen of the large water-bug, *Hydrocyrius Columbie*, Spin., common also to Madagascar and the Neotropical region; and read extracts from a letter received from Calabar district as to its power of attaching itself to stones by its tarsal claws, and even lifting large ones by the same means.—The Secretary exhibited an alcoholic specimen of a trichopterous insect belonging to the *Leptoceride*, forwarded from Brazil by Dr. Fritz Müller, and remarkable on account of its showing very distinctly the branchiæ lately discovered in the imago stage of this order by Dr. Palmén.—Dr. Wallace stated that, as the result of large numbers of experiments upon the rearing of silkworms of various species, he had come to the conclusion that the ordinary *Bombyx mori* is the only species that could be profitably reared in this country.—Sir John Lubbock forwarded for exhibition two species of *Bombycidae* from Adelaide, South Australia, together with their cocoons, eggs, and larvæ, and a letter from Mr. G. Francis giving details of the life-history of the specimens exhibited.—Mr. McLachlan read a note received from Mr. W. J. Wilson, residing in North-west India, referring to the appearance of locust-swarms in that district.—Dr. Fritz Müller communicated a paper entitled "Notes on the Cases of some South Brazilian Trichoptera."—Mr. Wood-Mason read a paper entitled "Morphological Notes bearing on the Origin of Insects," and exhibited microscopical preparations in illustration.

Victoria (Philosophical) Institute, May 19.—After the election of several new members, a paper on the ethnology of the Pacific was read by the Rev. S. J. Whitmee, illustrated by diagrams and an ethnological map of the Pacific, which Mr. Whitmee had prepared during his long residence in many of the various groups of islands in that ocean; many present afterwards joined in the consideration of the paper, in which the author gave many reasons for believing that in earlier times a considerable intercommunication took place between the Continent and the islands, and that there was no reason for believing that, from the evidence already obtained, any arguments could be drawn against the unity of the human family.

PARIS

Academy of Sciences, May 12.—M. Daubrée in the chair.—The following papers were read:—On vision of colours, and particularly the influence exerted on vision by coloured objects moving circularly, when observed comparatively with similar objects at rest, by M. Chevreul. A third extract from his work on the subject.—On the bases derived from aldol-ammonia, by M. Wurtz.—Note relative to a communication of M. Meunier; and on similar water-spouts observed recently, by M. Faye. The accounts are cited as giving strong confirmation of his theory.—Maps of the coast of Tunis and Tripoli, by M. Mouchez. These eleven maps, covering about 250 leagues of coast, are the outcome of M. Mouchez's recent voyage in the *Castor*. The Gulf of the Greater Syrtis seems destined to be always desert, and a dread to navigators; the fanatical and hostile Nomads seem to visit its borders only to pillage wrecked vessels. The coasts of the lesser Syrtis are more hospitable under the government of Tunis. In view of the expensiveness of M. Roudaire's scheme, M. Mouchez wishes it were undertaken by others than the French. The tides are very sensible and pretty regular in the Gulf of Khabs. Unfortunately the natives destroyed the scales erected, so that the author can only give approximate figures.—On the history of the theory of the thrust outwards in slanting arches, by M. de la Gournerie.—On the transformations of the second order of hyperelliptic functions, which, applied twice successively, produce duplication, by M. Borchardt.—M. Oppolzer was elected Correspondent in Astronomy in room of the late M. Argelander, and M. Favre Correspondent in Mineralogy in room of the late M. Leymerie.—On the effects of inhalation of spirit of turpentine, by M. Poincaré. His observations were both on workmen and animals. The disorders produced in the former are headache, giddiness, irritability, pricking and tearfulness in the eyes, and weakness of sight, irritations of pharynx and larynx, vomiting, &c. Through habit, men get to bear the vapours longer. The troubles are more intense and constant with spirits of turpentine from Hungary and America than with those of French

origin. Animals which died from the acute poisoning in confined space generally showed congestion and free drops of the condensed spirit in the blood.—On the means used by M. Gylde for regulating trigonometric developments representing perturbations, by M. Callandreau.—On a new form of co-ordinates in the problem of two bodies, by M. Gylde.—On two applications of the method of MM. Fizeau and Foucault. These rest (1) on substitution of a known system (in which the distance of the lines is determined by the condition that the wave-length of D is 0.0005888), and (2) on the use of formulæ of dispersion. The first application is the measurement of the thickness of a parallel crystalline plate; the second, study of the dispersion of double refraction of a plate.—Thermal researches on silicic ether, by M. Ogier. Its heat of formation may be determined either by analysis or by synthesis. The one method gave - 11.56 cal., the other - 11.44 cal.; mean - 11.5 cal. The heat of vaporisation of silicic ether is, for 1 equivalent, 7.0 cal.—Action of ammoniacal salts on some metallic sulphides, and application of the facts observed to mineral analysis, by M. De Clermont.—On a new mode of formation of glycol by means of nitric ether, by M. De Forcrand.—On the production of conidia by a bacillus, by M. Engel. This was observed in June, 1876, when some of the numerous bacilli in the blood of a woman who had died in childbed were placed in Pasteur's nutritive liquor. M. Engel designated the bacillus as *puerperalis*.—Influence of heat on the functions of the nervous centres of the crayfish, by M. Richet. Either by asphyxia, or (better) by temperatures varying from 23° to 36°, one may paralyse separately the different functions of the ganglionic nerve centres; the voluntary, intellectual innervation disappears first at 23° to 26°; the reflex innervation, properly so-called, disappears at 27° to 29°; and lastly, the innervation of respiration disappears at 28° to 30°.—Regeneration of nerves of the anterior epithelium of the cornea, and theory of continuous development of the nervous system, by M. Ranvier. The regeneration of cells of the anterior corneal epithelium precedes that of the nerves, showing that the reproduction and nutrition of the epithelial covering of the cornea are independent of the nervous system. The last nervous ramifications tend by their nature to grow continually at the periphery.—On the respiratory apparatus of Ampullaria, by M. Jourdain.—On a new genus of Anouuran Batrachian of Europe, by M. Lataste. This has been observed in Spain by M. Bosca. M. Lataste gives it the name *Amnoryctis*; it takes rank in the family of *Alytida*, of the sub-order of *Mediogyrinides*.—On the peculiar amyloid matter in the asci of some Pyrenomycetes, by M. Crie.—On the discovery of a jaw of Cainotherium in the gypsums of Aix (Bouches-du-Rhône), by M. Cairol. On borings made in view of formation of an interior sea in Algiers, by M. Roudaire. The new results are of the same order as the former.—Water-spouts at Vitry-sur-Seine, by M. Meunier.—M. Hervé Mangon presented the first volume of a "Statistical Atlas of Water-Courses, Manufactories, and Irrigations of France;" also a work by M. Demontzey, on the works of replanting and returning mountains.

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